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10/557,517

01/04/2007

Erik Forell

BJER-0002

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WOODCOCK WASHBURN LLP  
CIRA CENTRE, 12TH FLOOR  
2929 ARCH STREET  
PHILADELPHIA, PA 19104-2891

EXAMINER

KONG, SZE-HON

ART UNIT

PAPER NUMBER

3661

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/557,517             | FORELL, ERIK        |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Sze-Hon Kong           | 3661                |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 January 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17, 19, 20 and 23-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17, 19, 20 and 23-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 January 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/30/2009</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

2. The information disclosure statement (IDS) submitted on 1/30/2010 was filed. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Claim Objections***

3. Claims 23-30, 33-35 and 37 are objected to because of the following informalities:

The term "A robot system" (line 1 of claims 23-30) should read "The robot system".

The term "A method" (line 1 of claims 33-35) should read "The method".

Claim 37 appears to have the exact same limitation as claim 36 and should be cancelled.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1, 5, 7, 8, 11, 12, 13, 16, 20, 24, 26, 27, 30, 31 and 35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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6. Regarding claims 1, 5, 7, 8, 12, 13, 16, 24, 26, 27, 31 and 35, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

7. Regarding claim 20, the phrase "optionally" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

8. Regarding claims 11 and 30, the phrase "instead of" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

9. Regarding claim 13, the phrase "if available" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

10. Regarding claim 7, the phrase "Bluetooth™" directs to a trademark and a communication standard that can be indefinite. The phrase should be removed and phrase such as wireless should be used.

Applicant asserts that the claim elements "map storage" (claim 1, line 2), "means" (claim 1), "locating" (claim 1, line 4), "emitting" (claim 1, line 8), and "computer program code" at least are means (or step) plus function limitation that invokes 35 U.S.C. 112, sixth paragraph. However, it is unclear whether the claim element is a means (or step) plus function limitation that invokes 35 U.S.C. 112, sixth paragraph. If applicant wishes to have the claim limitation treated under 35 U.S.C. 112, sixth paragraph, applicant is required to:

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(a) Amend the claim to include the phrase “means for” or “step for” in accordance with these guidelines: the phrase “means for” or “step for” must be modified by functional language and the phrase must **not** be modified by sufficient structure, material, or acts for performing the claimed function; or

(b) Show that the claim limitation is written as a function to be performed and the claim does **not** recite sufficient structure, material, or acts for performing the claimed function which would preclude application of 35 U.S.C. 112, sixth paragraph. For more information, see MPEP § 2181.

### ***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. Claims 1-3, 5-10, 12, 13, 17, 19, 20 and 24-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ruffner (US 2002/0156556) and Huynh et al. (5,529,432).

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For claims 1-3, 12, 13, 17 and 19, Ruffner discloses a robot system having at least one mobile robot, for treating a surface, which comprises map storage means to store a map of the surface to be treated and means to navigate the, or each, mobile robot to at least one point on a surface, characterized in that the, or each, mobile robot comprises locating means to identify its position with respect to the surface to be treated (Abstract, paragraph 0078), means to automatically deviate the mobile robot away from its initial path in the event that an obstacle is detected along its path, means to store and/or communicate data concerning the surface treatment performed and any obstacles detected by the locating means (Paragraph 0089, 0090, 0094 and 0119) and emitting means that produce emissions of fertilizing, watering, or applying pesticides (Paragraph 0076).

Although Ruffner does not specifically discloses the emitting means produce emissions such as symbols, lines, shapes, or written characters in one or more colours for treating at least one point on a surface, It would have been obvious for one of ordinary skill in the art the robot system is capable of being programmed to emit symbols, lines, shapes, or written characters with colours on a surface. Huynh discloses a robot system for emitting different symbols, lines, shapes and characters (Fig. 9-13, and 15).

Ruffner discloses dispensing at least ink, paint, glue, liquid, chemical or powder and chemically react with the surface to be treated (Paragraph 0079), but does not disclose dispense a gas, light to mark, etch or decorate. However, it would have been

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obvious for one of ordinary skill in the art to dispense these known materials as desired or as needed for the task.

Ruffner discloses the robot system comprises an on-board computer including map storage means and means to store and/or communicate data concerning the surface treatment performed and any obstacles detected by the locating means (Paragraph 0031, 0033, 0090 and 0119).

Ruffner teaches generating path data but does not specifically disclose the path data is inputted in the form of a file such as a file from a CAD-system. It is known in the art to plot and generate path data for the robot using various types of navigation programs including CAD system.

For claims 5 and 24, Ruffner discloses as least location means of sensor; optical such as a laser, imaging, electromagnetic, sonar, GPS, motion, angle detection, contact or direction sensors (Abstract, paragraph 0132-0134).

Ruffner does not specifically disclose thermal imaging and pressure to locate the robot. However, it would have been obvious for one of ordinary skill in the art to use these known locating means to locate the robot.

For claims 6 and 25, Ruffner discloses means to differentiate between different objects or different parts of the same object by detecting differences in the reflectivity of the different materials constituting those objects (Paragraph 0089). It is known in the art to use reflectivity of materials to differentiate materials.

For claims 7-10 and 26-29, Ruffner discloses wired or wireless communication means using antenna to communicate with a remote user, control system or computer

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network or another robot (Fig. 8 and paragraph 0033, 0064-0070); report that an obstacle has been encountered by a mobile robot (10) if the obstacle has not been removed after a predetermined time such as a few seconds (Paragraph 0219); and the mobile robot traverses to surfaces both to be treated and not to be treated. (Paragraph 0253-0255)

Although Ruffner does not specifically disclose report the obstacle encountered if the obstacle has not be removed after a predetermined time, it would have been obvious such predetermined time for confirming the present of an obstacle is common in the art and is almost inherent that obstacle sensing require detection and processing especially with the use of contact type sensors to prevent erroneous detection. For claim 20, Ruffner discloses the system contains data stored thereon containing a map of a surface and optionally a pre-programmed path to direct the, or each, mobile robot around that path (Fig. 10, paragraph 0158, 0163).

Claims 4, 14, 15, 23, 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ruffner (US 2002/0156556) and Huynh et al. (5,529,432) as applied to claims 1 and 3 above, and further in view of Trovato et al. (5,083,256).

For claims 4, 14, 23 and 33, Ruffner does not specifically disclose the mobile robot is programmed to return to an area in which an obstacle was detected after a pre-determined time to check whether the obstacle is still present and whether it is therefore still hindered from performing surface treatment in that area. However, it would have been obvious while the robot is programmed to navigate the area and the obstacle detected previously, which was reported and stored still presents, the obstacle still



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hinder the task for treating that area. Trovato discloses a system for navigating a robot to return to an area with obstacle detected previously and determine if the obstacles has been removed and if so, perform task in the areas efficiently by locating the areas (Fig. 1, col. 5, line 27 – col. 6, line 39). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the invention of Ruffner to program the robot to return to the area having an obstacle present, taught by Trovato to attempt treating the preprogrammed task entirely and not leaving untreated areas.

For claims 15 and 34, Ruffner discloses the robot being instructed to perform tasks at areas (Abstract, paragraph 0034, 0200) and would have been obvious the areas being instructed to return could have the obstacle removed.

14. Claims 11 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ruffner (US 2002/0156556) and Huynh et al. (5,529,432) as applied to claims 1 and 10 above, and further in view of Bottomley et al. (6,941,199).

For claims 11 and 30, Ruffner discloses deletion means to remove emissions produced by the emitting means of the same or another mobile robot in the same or a previous run respectively (Abstract, paragraph 0027). While producing and removing emission depends on the tasks desire, Ruffner discloses vacuuming, sanding, waxing, polishing, shampooing, or pressure washing. It is obvious after the task of shampooing or sanding is completed, vacuuming, polishing or pressure washing would be desired to remove the previously applied and/or generated material from the surface. Bottomley

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discloses a cleaning robot applying a second chemical over the first, neutralizing the characteristic properties of the first chemical (Col. 10, lines 25-31)

15. Claims 16 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ruffner (US 2002/0156556), Huynh et al. (5,529,432) and Trovato et al. (5,083,256) as applied to claims 12 and 15 above, and further in view of Aman et al. (US 2002/0030742).

For claims 16 and 35, Ruffner discloses one or more points or parts of a permanent structure having a complex geometry and located in the working area of the, or each mobile robot is marked with reflective material, to strengthen the signals reflected from said points or parts to facilitate correspondence between data from the locating means and data from the robot system's map (Paragraph 0059, 0064, 0119, lines 22-35, 0121).

Ruffner does not specifically disclose using reflective tape as the reflective material. Aman discloses using reflective tape to provide stronger reflective signal (Paragraph 0108). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the invention of Ruffner to utilize reflective tape, taught by Aman to improve the accuracy and efficiency for recognizing the perimeter and objects with higher reflective markers.

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16. Claim 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ruffner (US 2002/0156556) and Huynh et al. (5,529,432) as applied to claim 1 above, and further in view of McMurtry et al. (US 2005/0055142).

For claim 31, Ruffner discloses the mobile robot is operative for indicating or marking out any indoor or outdoor surface such as construction site (Paragraph 0071, 0076, an indoor or outdoor application as in construction site).

Although Ruffner does not specifically disclose marking a physical lay-out of an exhibition or a trade fair, it would have been obvious for one of ordinary skill in the art to perform such task not only in exhibition or a trade fair but on any desirable surfaces and/or location. McMurtry discloses marking a physical lay-out on surfaces (Fig. 30-31, paragraph 0003-0008)

17. Claims 32, 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ruffner (US 2002/0156556) and Huynh et al. (5,529,432) as applied to claims 1 and 12 above, and further in view of Verbeek (6,039,056).

For claims 32, 36 and 37, Ruffner does not specifically disclose the robot is operative for marking out a physical lay-out at a site under hazardous or hygienic conditions. However, it would have been obvious to one of ordinary skill in the art the features of the robot can be applied easily to any suitable and desirable conditions and location. Verbeek discloses a mobile robot that is operative in hygienic conditions (Fig. 1, col. 2, lines 27-28).

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***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sze-Hon Kong whose telephone number is (571)270-1503. The examiner can normally be reached on 7:30AM-5PM Mon-Fri, Alt. Fri. Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

4/23/2010

/Sze-Hon Kong/  
Examiner, Art Unit 3661

/Thomas G. Black/  
Supervisory Patent Examiner, Art Unit 3661